

Chemical Habitat Quality: A Major Source of Uncertainty in Salmon Recovery Planning

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Abstract

Salmon recovery planners are increasingly faced with the following question: how should habitat restoration activities be ranked for river systems and estuaries that have mixed chemical and physical degradation? This is a key question for natural resource managers who must confront the complex impacts of urbanization, agricultural land uses, and industrial activities on salmon habitats in Puget Sound and the Georgia Basin. Obviously, where pollution occurs, habitat-based recovery models for salmon should address the potential significance of chemical habitat deterioration. Unfortunately, specific determinants of chemical habitat quality (i.e., water and sediment contamination) are often excluded from habitat models. This is because (1) chemical habitat quality can be very complex and expensive to measure, and (2) there is a general absence of relevant toxicological data for most of the chemicals that salmon are exposed to. In the absence of empirical data for pollution, habitat recovery plans have generally placed a higher priority on the restoration of physical processes. Critically, this practice may undervalue the importance of chemical habitat quality and lead to predictive errors in recovery planning. To address these uncertainties, we provide examples of ongoing research designed to bridge the gaps between toxicology and the implementation of conservation measures for salmon.